

Machine or Nature

"Those who look for the laws of Nature as a support for their new works collaborate with the Creator."

- *Antonio Gaudi*

During a period of industrial revolution and mechanization, there remained a thread of discourse that was interested in biological systems. Roughly 100 years ago, modernism was emerging in architecture through implementation of the then current technological innovations. New methods of mass production and new high-strength, light-weight materials were deployed to shape a modern world of tomorrow fitted with the latest conveniences for modern life. Advocates of the movement were inspired by the efficient technology of the machine. Transportation vehicles such as the airplane, automobile, and ocean liner enabled man to travel great distances, which previously took days or weeks on horseback, in a relatively short time. Production and manufacturing had achieved massive efficiency. Science had taken the place of philosophy in terms of logic and thinking. Architects searched for ways to build with the same functionality, creating "machines", as Le Corbusier put it, "for living in."

We know all too well the history of European modernism that rose from a post-war environment of necessity, and then immigrated to America to first become a symbol of capitalism, then corporate power in the skyscraper, then mutated with classicism for 'aesthetic purposes, and ultimately classified into 'styles' referred to as 'functionalism', 'minimalism', or 'international style'...etc. It is becoming more and more prevalent and widely used by designers who reject notions of ornamentation and classical architecture, often called 'traditional'. These are not new ideas, in fact they are quite old, and the canon of 'modern architecture', using platonic solids and pure geometrical forms has replaced the renaissance as the 'traditional'.

Just as the modernists of last century were inspired by the technology of their day, so are the architects of the 21st century. Over the past decade or two, advances in computation and software development has given new tools to designers, resulting in a proliferation of form generation with increasing geometrical complexity. Advances in the fields of robotics, genetic research, and artificial intelligence inspire architects to design and ultimately build with the sophistication of intelligent organisms. Natural systems are researched bringing a bio-mimetic generation to form-giving and architectural design. As early as 1968, computational systems such as the Lindenmayer system (after the Hungarian biologist, Aristid Lindenmayer), were developed to simulate natural growth and branching through a recursive process. Today, computational software enables architects to deploy and manipulate similar logics to building design.

Some may discard this trajectory as unimportant, reacting only to a visual impulse. Many morphological productions and explorations have been classified as 'blobs', and regarded to as unbuildable, digital art. The research is still relatively experimental and considered an infant, though manufacturing capabilities are rapidly being developed to realize the designs. CAM techniques using computer numeric controlled (CNC) milling, water or laser cutting is enabling the work to translate from a cyber environment into a physical one. Just as the pioneers of the modern movement made proposals for a new tomorrow, so are many of today's architects foreseeing a possible world of intelligent cities and -literally- 'smart growth' for the next century. Throughout architectural history, advances in world technology as inspired thinkers to imagine other possible worlds. Inspired by the complexity of growth systems and behavioral patterns of Mother Nature, rather than man-made machines, the ambition of the discipline is placed beyond the existing creations of man, and after the designs of the Master Creator.

MASH-ARKT : 2006